Workshop III: Relativistic Astrophysics

Monday May 2, 2005

8:00–8:45 *Check-In/Light Breakfast (Hosted by IPAM)*

8:45–9:00 *Welcome and Opening Remarks*

9:00–10:00 **Joan Centrella** (NASA GSFC)
Gravitational Wave Science: Challenges for Numerical Relativistic Astrophysics

10:00–10:30 *Break*

10:30–11:30 **Frans Pretorius** (California Institute of Technology)
On the Simulation of Binary Black Holes in General Relativity

11:30–1:30 *Lunch (on your own)*

1:30–2:30 **Luis Lehner** (Louisiana State University)
Many directions to a black hole

2:30–3:00 *Break*

3:00–4:00 **David Meier** (California Institute of Technology)
Trends in Numerical Relativistic Astrophysics

4:00–4:15 *Break*

4:15–5:15 **Jose Antonio Font** (University of Valencia)
Improved simulations of relativistic stellar core collapse

5:15–7:15 *Wine/Cheese Reception (Hosted by IPAM)*

Tuesday May 3, 2005

8:00–9:00 *Continental Breakfast*

9:00–10:00 **Jerome Novak** (Observatoire de Paris)
Fully-constrained formulation of Einstein's field equations using Dirac gauge

10:00–10:30 *Break*

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10:30–11:30 **Luciano Rezzolla** (International School for Advanced Studies (SISSA/ISAS))
3D collapse to rotating black holes: dynamics of matter, trapped surfaces and gravitational radiation

11:30–1:30 *Lunch (on your own)*

1:30–2:30 **Anthony Mezzacappa** (Oak Ridge National Laboratory)
The Computational Challenge of Modeling the Explosion of Massive Stars

2:30–3:00 *Break*

3:00–4:00 **Miguel-Angel Aloy** (University of Valencia)
General relativistic simulations of post-neutron star mergers as progenitors of short Gamma-ray bursts

4:00–4:15 *Break*

4:15–5:15 **Andrew MacFadyen** (Institute for Advanced Study)
Relativistic AMR Simulations of GRBs

Wednesday May 4, 2005

8:00–9:00 *Continental Breakfast*

9:00–10:00 **Oscar Reula** (FaMAF,Universidad Nacional de Cordoba)
Implementing high order touching grids in numerical relativity

10:00–10:30 *Break*

10:30–11:30 **Mark Scheel** (California Institute of Technology)
Constraint-preserving boundary conditions for the Einstein evolution system

11:30–1:30 *Lunch (on your own)*

1:30–2:30 **Lee Lindblom** (California Institute of Technology)
Optimal Constraint Projection

2:30–3:00 *Break*

3:00–4:00 **Harald Pfeiffer** (California Institute of Technology)
Binary black hole initial data

4:00–4:15 *Break*

4:15–5:15 **Shing-Tung Yau** (Harvard University)

5:15–7:15 *Dinner (Hosted by IPAM)*

Thursday May 5, 2005

8:00–9:00 *Continental Breakfast*

9:00–10:00 **Matthew Choptuik** (University of British Columbia)

10:00–10:30 *Break*

10:30–11:30 **Hideaki Kudoh** (University of Tokyo)
Black holes with extra dimensions: the black-hole black- string transition

11:30–1:30 *Lunch (on your own)*

1:30–2:30 **Tsvi Piran** (Hebrew University)
Numerical Studies of Black Holes in Higher Dimensions.

2:30–3:00 *Break*

3:00–4:00 **Masaru Shibata** (University of Tokyo)
Merger of binary neutron stars with realistic equations of state

Friday May 6, 2005

8:00–9:00 *Continental Breakfast*

9:00–10:00 **Anatoly Spitkovsky** (Stanford University)
Simulations of force-free relativistic MHD

10:00–10:30 *Break*

10:30–11:30 **Saul Teukolsky** (Cornell University)
Why is Numerical Relativity so Important and Yet so Hard?

11:30–1:30 *Lunch (on your own)*

1:30–2:00 **Maria Hamilton** (University of Pittsburgh)
Gravitational wave extraction using the Cauchy-characteristic method

2:00–2:10 *Break*

2:10–2:40 **Melvin Leok** (University of Michigan)
Towards Discrete Exterior Calculus and Discrete Mechanics for Numerical Relativity

2:40–2:50 *Break*

2:50–3:20 **Jian Tao** (Washington University in St. Louis)
Binary NS evolution with AMR

3:20–3:30 *Break*

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3:30–4:00 **P. Chris Fragile** (College of Charleston)
Relativistic MHD on Unstructured Grids with Local Adaptive Refinement